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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/004,060	10/31/2001	Laurance N. Hazlehurst	38190/207407	6687

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ALSTON & BIRD LLP
BANK OF AMERICA PLAZA
101 SOUTH TRYON STREET, SUITE 4000
CHARLOTTE, NC 28280-4000

EXAMINER

CADUGAN, ERICA E

ART UNIT PAPER NUMBER

3722

DATE MAILED: 01/26/2004

12

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/004,060

Applicant(s)

HAZLEHURST ET AL.

Examiner

Erica E Cadugan

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-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-64 is/are pending in the application.
- 4a) Of the above claim(s) 9,12-16,21,23-25,37-46,48-54 and 58-64 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 47 and 55-57 is/are allowed.
- 6) ☒ Claim(s) 1-3,10,11,17,18,20,26-29,35-36 is/are rejected.
- 7) ☒ Claim(s) 4-8,19,22 and 30-34 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. It is noted that claims 9, 12-16, 21, 23-25, 37-46, 48-54, and 58-64 are still withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species/invention, there being no allowable generic or linking claim, which restriction requirement was made final in the preceding office action.

Claim Objections

2. Claim 22 is objected to because of the following informalities: in line 2, it appears that “applying” should be --apply--. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1-3, 10-11, 17-18, 20, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 3,722,497 (Hiestand et al.) in view of any of U.S. Pat. No.’s 5,477,596 (Schlosstein et al.), 5,016,359 (Nagaoka et al.), 5,635,833 (Onodera et al.), or 6,095,728 (Howie), and also, claims **1-3, 10-11, 17, 20, and 36** are rejected under 35 USC 103(a) as being unpatentable over either of U.S. Pat. No.’s 4,422,384 (Johnson et al.), 2,921,492 (Worth) in view of any of U.S. Pat. No.’s 5,477,596 (Schlosstein et al.), 5,016,359 (Nagaoka et al.), 5,635,833 (Onodera et al.), or 6,095,728 (Howie).

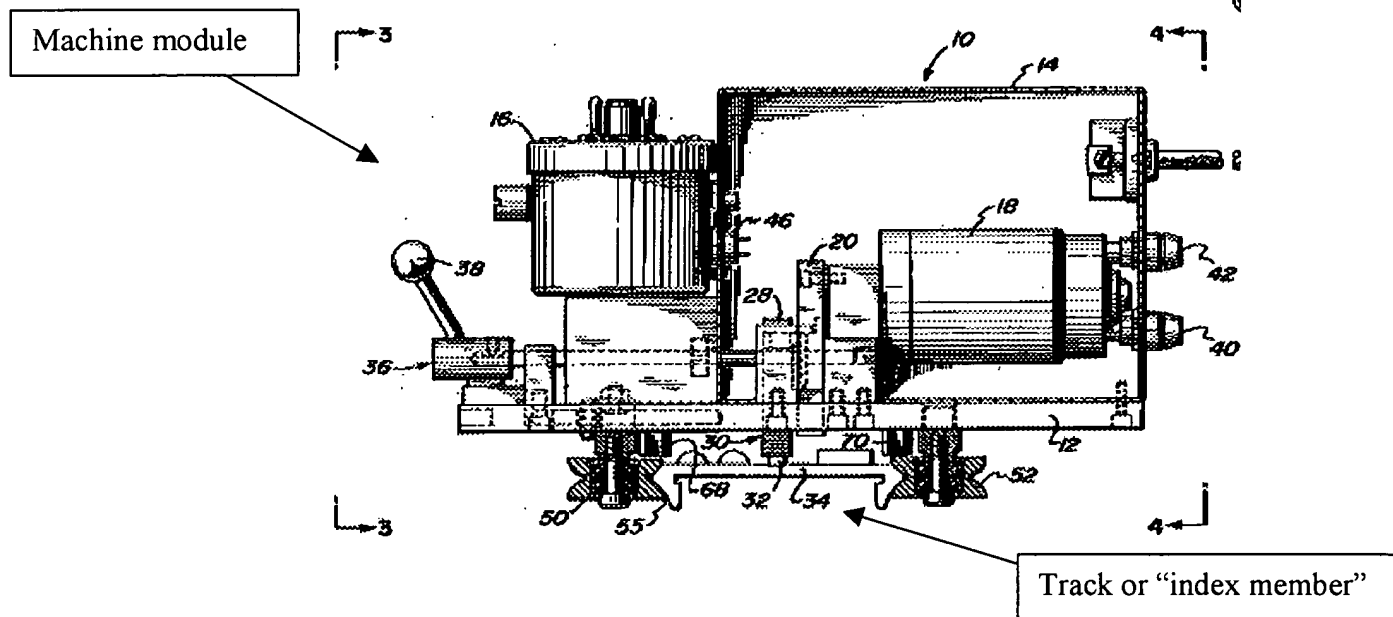
Johnson et al., Worth, and Hiestand et al. each teach “machine modules” having processing tools for processing a workpiece, which modules are provided for being driven along

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a track or guide that is affixed to the workpiece. See the Figures below that are reproduced from these references.

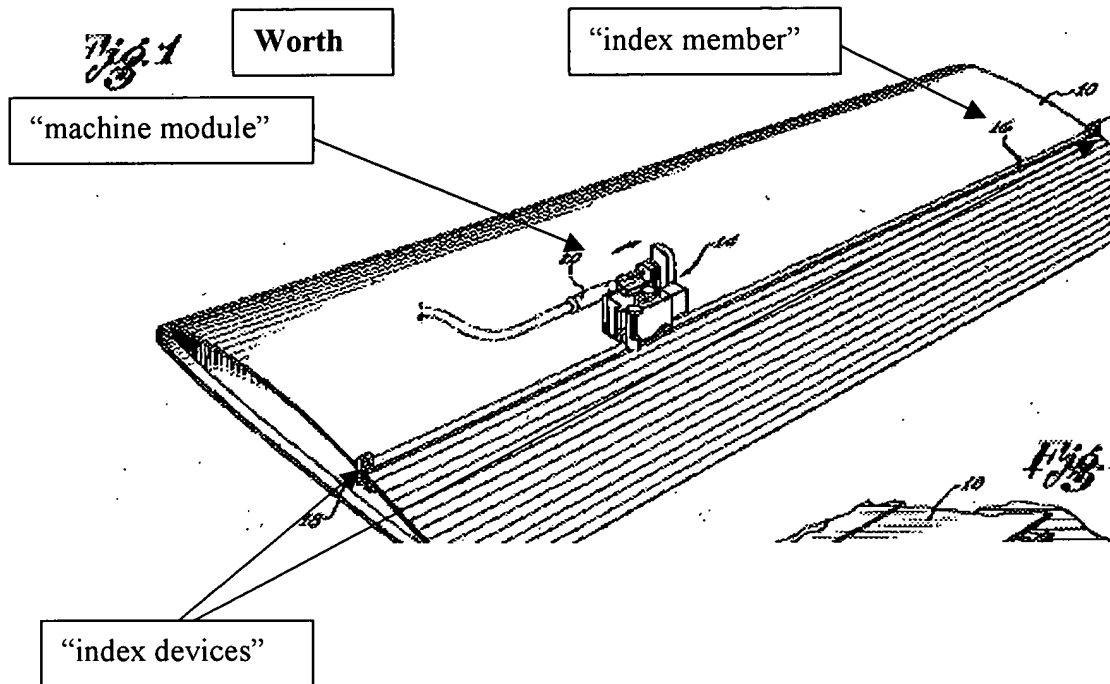
FIG. 2

Johnson et al.



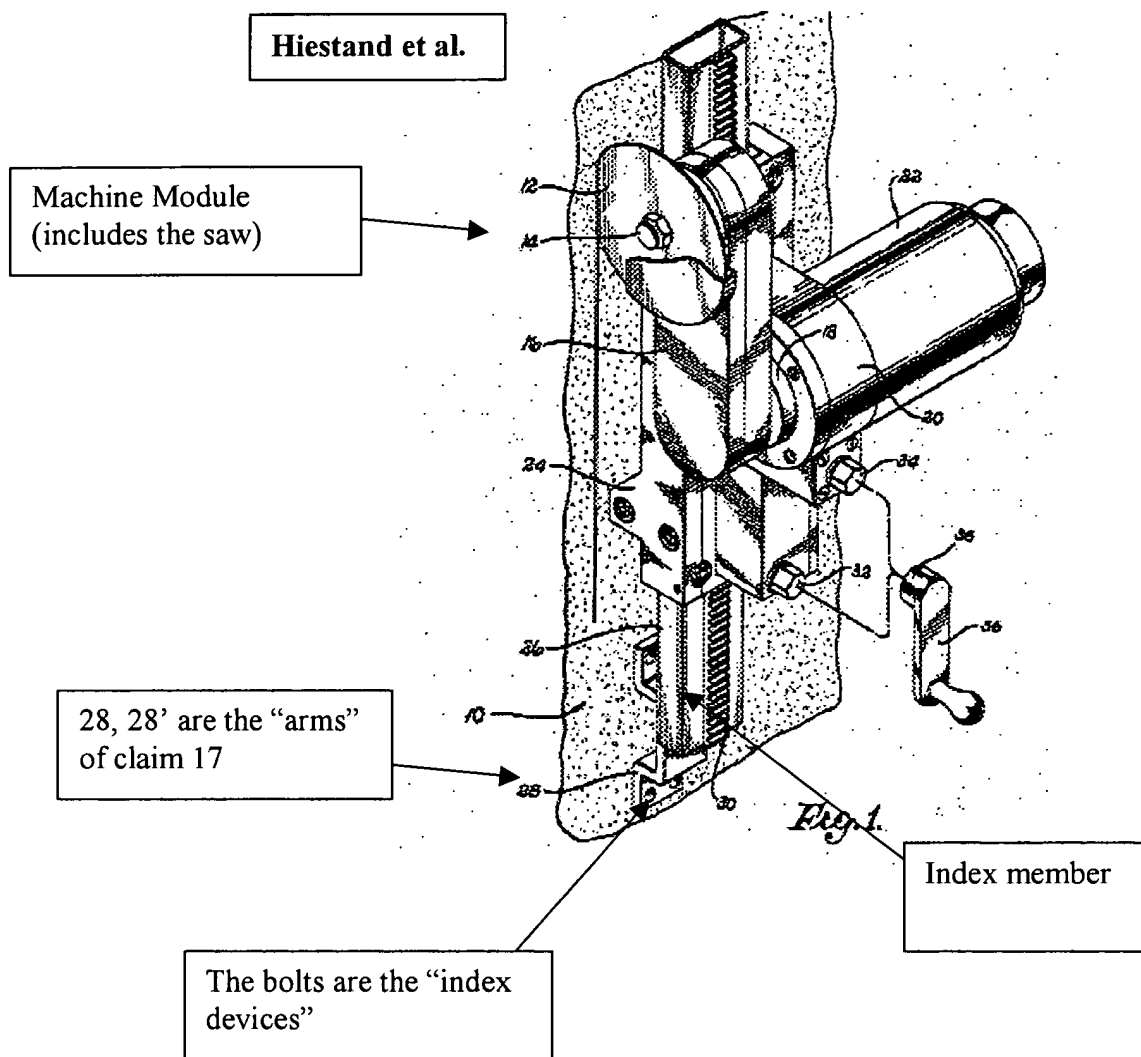
In Johnson et al., the devices described in col. 1, lines 10-11 that secure the track to the workpiece are considered the claimed “index devices”. Regarding claim 10, note that the “machine module” is driven via a motor and rack and pinion system (see col. 2, lines 1-4, for example). Regarding claim 11, note that the drive motor and gear, as well as the rack 32, are separate from or “independent” of the index member or track 34 (see Figure 2, also col. 2, lines 1-4, for example). Regarding claim 17, it is considered inherent that there must be some structure of the track that contacts or connects to the described “index devices”, or else the index devices would not function to secure the track in position relative to the workpiece as described

in col. 1, lines 1-18, for example. Regarding claim 20, note that Johnson teaches locking the device in place (see col. 3, lines 3-7 and col. 4, lines 50-60, for example).



In Worth, regarding claim 10, note that Worth specifically teaches cooperating drive elements to drive the “machine module” along the “index member” or rack and track 16 (see col 3, lines 9-15 and col. 4, lines 40-68, for example). Additionally, regarding claim 11, note that the members of the drive are different than or separate from or “independent of” the “index member”. Regarding claim 17, as viewed in Figure 1, the “index devices” 18 which attach the “index member” 16 to the workpiece are C-clamps. Note that such C-clamps have “arm portions”. Regarding claim 20, Worth teaches stop leg 156 (see Figure 4 and col. 4, lines 1-7 and 61-69, for example).

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In the Hiestand reference, regarding claim 10, Hiestand specifically teaches that a motor can be used to drive the worm 70 to thereby drive the worm wheel 68, which thereby, via the engagement of gear 66 with rack 30, drives the "machine module" along the "index member" 26 (see Figures 1-2 and col. 4, lines 45-46 and col. 3, lines 15-27, for example). Regarding claim 11, note that the drive elements appear to all be separate from or different than the "index member" 26 (note in Figure 1 that the rack, as shown at its cross section at the top of the member 26, is shown as a different member than 26). Specifically regarding claim 18, note that Hiestand

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specifically teaches the use of plural brackets or “arms” 28, 28’, see col. 4, lines 8-12). Note that both “arms” are “fixed” to the member 26 in use, or else the device would not function in use as described by Hiestand. Further note that it is considered inherent that both “arms” are also “able” to be adjusted along the index member 26 by physically separating them from the member 26, and moving them longitudinally along the index member, for example, by cutting the arm from the member 26 and moving it by hand to a new position and reattaching it at said new position.

None of Johnson et al., Worth, or Hiestand et al. teach any sort of device whereby the “machine module” detects “position-indicating features” along the index member to thereby determine a position of the machine module relative to the workpiece. Additionally, regarding claim 36, none of Johnson et al., Worth, or Hiestand et al. explicitly teach plural systems as claimed.

Regarding the position-indicating features, etc., each of Schlosstein et al., Nagaoka et al., Onodera et al., and Howie teaches a linear scale in the form of an “encoder tape” or “position-indicating strip” which is provided on a stationary member, and a reader that is provided on a moveable member for reading “position-indicating features” of the scale as relative movement occurs between the movable member and the stationary member. See Schlosstein et al., col. 5, lines 50-55, for example. See Nagaoka et al., Figures 1-2, col. 1, lines 5-10 and col. 3, lines 33-53, for example. See Onodera et al., Figure 1 and the abstract, for example. See Howie, Figure 1 and col. 1, lines 5-15 as well as col. 5, lines 23-49, for example.

Schlosstein et al. specifically teaches that the linear scale device enables the control system for the machine to position the carriage 40 (of the truck) with “great accuracy lengthwise

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along the path of the stringer so that the holes are drilled at the correct position” (col. 5, line 62 through col. 6, line 2). Nagaoka et al. specifically teaches that the linear scale device provides an accurate device for measuring the relative position or displacement between two objects, which device is specifically constructed so as to be easily manufactured (see col. 1, lines 50-55, for example). Onodera et al. specifically teaches that their scale is especially suitable for performing accurate measurements in a machine tool environment because it is specially constructed to be “fully protected from being damaged” (col. 1, lines 38-42 and also lines 1-37). Howie specifically teaches that his position monitoring device is advantageously used in an environment with tool changes so that each tool can easily be re-zeroed (see col. 2, lines 47-55 and col. 1, lines 15-25, for example).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided any of the stationary track members or “index member” taught by any of Johnson et al., Hiestand et al., or Worth with the scale or “position-indicating strip”/“encoder tape” of any of Schlosstein et al., Nagaoka et al., Onodera et al., and Howie for any of the purposes of enabling the drives of any of the devices of Johnson, Hiestand, or Worth to position their “machine modules” with “great accuracy lengthwise” so that machining is performed at the correct position as taught by Schlosstein et al. (col. 5, line 62 through col. 6, line 2), so that an easily manufactured device that improves the accuracy of the machining operation is provided as taught by Nagaoka as described above, so that a rugged non-easily-damaged device that improves the accuracy of the machining operation is provided as taught by Onodera as described above, or so that when tools of the machining devices are replaced, such as with new ones when the old ones become dull, the device can easily be

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rezeroed, thus improving the accuracy of the machining operation, as taught by Howie and described above.

Regarding claim 36, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided as many devices as were desired or expedient, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

Regarding claim 17 and the Johnson reference, in the alternative, while it is considered inherent that there must be some structure of the track that contacts or connects to the described “index devices”, as described above, Johnson does not specify that such structure is in the form of “arms” as claimed. However, it is noted that an arm is a well-known device as used for connecting and securing two members. As such, it would therefore have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized well-known and conventional “arms” to secure the track to any of the various track positioning or “index devices” described in col. 1, lines 1-18 for the purpose of providing a well-known, and thus readily available and also proven means of attachment of the track to the “index devices”.

5. Claims 26 and 28-29 rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 4,422,384 (Johnson et al.) in view of any of U.S. Pat. No.’s 5,477,596 (Schlosstein et al.), 5,016,359 (Nagaoka et al.), 5,635,833 (Onodera et al.), or 6,095,728 (Howie) as applied to claim 1 above, and further in view of U.S. Pat. No. 6,158,666 (Banks et al.).

Johnson et al. in view of any of Schlosstein et al., Nagaoka et al., Onodera et al., or Howie teaches all aspects of the claimed invention as described in the above rejection based thereon.

However, while Johnson generically teaches that the “machine module” can be a “tractor or tool

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positioning device” for supporting and guiding a “metal working tool” (col. 1, lines 5-8) and also generically teaches that the metal working tool can be for, for example, “e.g., gas cutting or welding, Air Carbon-Arc Cutting or Gouging, mechanical machine, or the like” (col. 2, lines 32-40, for example), which teaching encompasses or does not preclude a drill or a fastener insertion device, Johnson does not explicitly teach a drill or a fastener insertion device.

However, Banks et al. teaches a mini-riveter system 100 for processing workpiece panels 110 (Figure 5, for example). Banks also teaches longitudinally-extending rails 102 (see Figure 5 and col. 7, lines 28-34, for example) that are releasably engaged with the workpieces (see Figure 5, for example). Regarding the “machine module”, note that outside end effector assembly 104 (Figure 8A, for example) includes a drill/countersink module 252 and a rivet module 254 (Figures 8A-8E), and is movable along rails 102 (col. 10, lines 24-26, for example) via “cooperating drive elements” such as friction drive wheel that “cooperates” with the surface of rail 130 (col. 10, lines 23-41, for example).

Regarding claim 29, note that pressure foot 230, mounted on end effector 104 applies clamp-up pressure to the lap joint being fastened (col. 10, line 42 through col. 11, line 30, also, Figures 8C to 8E and col. 6, lines 1-3 and 23-35).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have substituted the specific machine module that is movable along rails and which includes a drill/countersink module, rivet module, and pressure foot (as well as its index pins on which the end effectors of the module home) as taught by Banks, or to have substituted the prior art mini-riveter system described by Banks which homes on fixtures (col. 6, lines 52-53) for the generic “tool positioning device” taught by Johnson for the purpose of

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providing a specific market for Johnson's device, i.e., the drilling and/or riveting market, thereby generating revenue for the sales of Johnson's device.

6. Claims 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pat. No. 4,422,384 (Johnson et al.) in view of any of U.S. Pat. No.'s 5,477,596 (Schlosstein et al.), 5,016,359 (Nagaoka et al.), 5,635,833 (Onodera et al.), or 6,095,728 (Howie) as applied to claim 1 above, and further in view of U.S. Pat. No. 3,722,711 (Seidel).

Johnson et al. in view of any of Schlosstein et al., Nagaoka et al., Onodera et al., or Howie teaches all aspects of the claimed invention as described in the above rejection based thereon. However, while Johnson generically teaches that the "machine module" can be a "tractor or tool positioning device" for supporting and guiding a "metal working tool" (col. 1, lines 5-8) and also generically teaches that the metal working tool can be for, for example, "e.g., gas cutting or welding, Air Carbon-Arc Cutting or Gouging, mechanical machine, or the like" (col. 2, lines 32-40, for example), which teaching encompasses or does not preclude a drill, Johnson does not explicitly teach a drill, nor does Johnson teach a drill changer.

Seidel teaches an automatic tool changing device that includes a tool carrier 24 containing a plurality of tools 25 and mounted on a spindle carrier 21 (Figure 1) which is linearly moveable (see col. 4, lines 6-13) in the plunging or Z-direction to and from the workpiece (and the spindle can thus be considered a "drilling spindle"), wherein tool interchanger 29 exchanges tools between the spindle 22 on the spindle carrier 21 and the tool carrier 24 (Figure 1).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have substituted the spindle carrier provided with the automatic tool changing device mounted on a tool carrier as taught by Seidel for the generic "machine module"

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taught by Johnson for the purpose providing a metal working tool carrier that enables tools to be easily exchanged, thereby desirably increasing the capabilities of Johnson's device (for example by enabling plural diameters of holes to be drilled easily by providing a tool of a first diameter and a tool of a second diameter to be automatically exchanged).

7. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pat. No. 4,422,384 (Johnson et al.) in view of any of U.S. Pat. No.'s 5,477,596 (Schlosstein et al.), 5,016,359 (Nagaoka et al.), 5,635,833 (Onodera et al.), or 6,095,728 (Howie) , and further in view of U.S. Pat. No. 3,722,711 (Seidel) as applied to claims 1 and 26 above, and further in view of U.S. Pat. No. 5,718,545 (Husted).

Johnson in view of any of Schlosstein, et al., Nagaoka et al., Onodera et al., or Howie and further in view of Seidel teaches all aspects of the claimed invention as described in the above rejection based thereon, but does not teach that the drill is "rotatable about at least one rotation axis for varying a drilling direction along which a hole is drilled in a workpiece".

Husted teaches a spindle block 40 (Figures 1-2) that can be used for drilling operations (col. 2, lines 21-28). The spindle block is pivotable about axle 44 (Figure 2) so as to rotate a tool 80 held thereby about the axle 44, thus presenting the tool to the workpiece at a different angular position (Figure 2).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided the capability of pivoting the drilling tool taught by aforescribed combination of references about an axis in order to vary the presentation of the tool to the workpiece as taught by Husted for the purpose of increasing the capabilities of the

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device taught aforementioned combination (by enabling said device to drill holes at different angles).

Allowable Subject Matter

8. Claims 4-8, 19, 22, and 30-34 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. Claims 47, 55-57 are allowed.

10. Reasons for allowance for the allowed independent claims were set forth in the preceding office action.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

11. Applicant's arguments filed November 13, 2003 have been fully considered but they are not persuasive. Many of Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection, and accordingly, applicant's attention is directed to the above rejections. However, Examiner will address those arguments which still pertain.

12. Specifically, it is noted that Applicant has asserted that "Schlosstein et al. does not show such a strip-like position-indicating device, and further does not teach or suggest that the strip can be an encoder tape". However, this is not persuasive. Schlosstein et al. specifically teaches the use of a "positional scale 100" that is an element of a "Sony magnascale longitudinal position

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indicating system”, wherein the scale 100 is read by a reader 102 (see col. 5, lines 50-55). It is thus unclear in what regard Applicant is asserting that the longitudinal scale 100 does not constitute the claimed “position-indicating strip” or an “encoder tape”. Note that Schlosstein explicitly teaches that the scale is used for position indicating as described above, that it extends longitudinally and thus has the shape of a “strip”, and regarding the “encoder tape” that the present specification sets forth that the “machine-readable tape or strip” can be “optically or magnetically encoded with position-indicating information” (see page 2, last paragraph, for example), and thus there appears to be no reason why the scale 100 taught by Schlosstein that is an element of a “magnascale” and that is read by a reader 102 could not be considered the “encoder tape” as claimed.

Faxing of Responses to Office Actions and Contact Information

13. In order to reduce pendency and avoid potential delays, TC 3700 is encouraging FAXing of responses to Office Actions directly into the Group at (703) 872-9306. This practice may be used for filing papers not requiring a fee. It may also be used for filing papers which require a fee by applicants who authorize charges to a PTO deposit account. Please identify the examiner and art unit at the top of your cover sheet. Papers submitted via FAX into TC 3700 will be promptly forwarded to the examiner.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erica Cadugan whose telephone number is (703) 308-6395. The examiner can normally be reached on Monday through Thursday from 7:30 a.m. to 5:00 p.m., and every other Friday from 7:30 a.m. to 4:00 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, A.L. Wellington can be reached at (703)

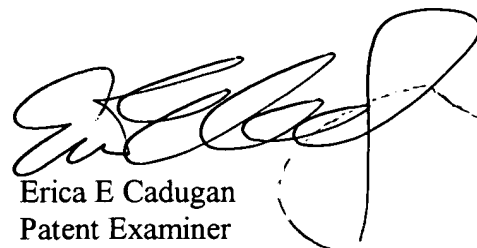
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308-2159. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the TC 3700 receptionist whose telephone number is (703) 308-1148.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erica E Cadugan whose telephone number is (703) 308-6395. The examiner can normally be reached on M-F, 7:30 a.m. to 5:00 p.m., alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrea L. Wellington can be reached on (703) 308-2159. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1148.



Erica E Cadugan
Patent Examiner
Art Unit 3722